

**Before the  
FEDERAL COMMUNICATIONS COMMISSION  
Washington D.C. 20554**

In the matter of:	)	
	)	
Unlicensed Operation in the TV	)	ET Docket No. 04-186
Broadcast Bands	)	
	)	
Additional Spectrum for Unlicensed Devices	)	ET Docket No. 02-380
Below 900 MHz and in the 3 GHz Band	)	
	)	

COMMENTS OF

**NAMM, the International Music Products Association**

Overview

NAMM, the International Music Products Association, is an international organization representing more than 7,700 retailers and manufacturers of musical instruments and electronic products. NAMM's mission is to unify, lead, and strengthen the global music products industry, and to increase active participation in music making. NAMM sponsors the two largest music industry trade shows in North America. In addition, the organization supports educational programs in schools and communities that encourage children and adults (including senior citizens) to learn to make music. NAMM's members serve both the recreational and professional musicians.

Musicians communicate with their audiences through the language of music. It is a language that allows them to tell their stories and express their feelings in a uniquely personal way, even though they may be performing on stage, radio or television for thousands of people at once. The microphone plays a critical role in this communication process. For this reason, musicians choose their microphones very carefully. The microphone must convey every subtle nuance of their performance without adding anything or leaving anything out. It must also be highly reliable. Most performers now

prefer a wireless model because of the freedom it gives them to move around on stage and to interact with their audience.

NAMM is concerned about the impact of ET Docket No. 04-186, which proposes to allow unlicensed devices to operate in vacant television channels. The reason for this concern is the fact that wireless microphones and other types of wireless audio gear are already using these “vacant” channels. Wireless microphones currently operate in the TV bands as licensed secondary uses under Part 74 of the FCC Rules. However, they could be rendered unusable if new rules are implemented without providing adequate protection for wireless microphones and other types of wireless equipment such as in-ear monitoring systems. Therefore, NAMM recommends that the Commission study ways to prevent interference to wireless microphones and make provision for their continued successful operation in any new rules that it issues.

I. Wireless microphones are an indispensable part of musical performances

Many people think of wireless microphones in connection with vocal musicians. However, the fact is that all types of musical and theatrical performances currently use wireless audio technology. There are many different kinds of wireless microphones, including models that are especially designed for use with musical instruments. However, other wireless audio technologies, such as in-ear monitoring systems and wireless intercoms, are also important to audio production in the studio and on stage. Wireless microphones and wireless audio systems have become so important that most broadcast events and public performances could not be presented without them. At the same time, musicians demand that their equipment operate reliably and without interference. If a musician or performer experiences a problem during a live performance, recovery can be very difficult and potentially ruinous to a performance.

II. Unlicensed devices could interfere with wireless microphones unless additional protective measures are taken

In ET Docket 04-186, the Commission recognized wireless microphone operation, but suggested that wireless microphones might continue to operate without any specific interference prevention techniques. NAMM does not believe that this approach is viable, for several reasons. First, due to the uncontrolled nature of unlicensed device use, it is impossible to predict where and when these devices will be operated. It is easy to imagine their use on the same stage or nearby within the same building where a musical performance is taking place. In addition, most unlicensed device users would lack the technical skills to resolve interference problems, should they occur. Furthermore, it may not be possible to easily locate and shut down an unlicensed device that is interfering with a wireless microphone system during a live performance; for example, an unlicensed Wireless Local Area Network (WLAN) system that is locked up in an equipment closet. If unlicensed devices are allowed to operate in the TV broadcast bands, interference prevention techniques that do not require intervention on the part of the unlicensed device user must be implemented.

In its Notice of Proposed Rulemaking (NPRM), the Commission's focus seems to be on protecting television broadcasts from interference, which is understandable. However, the Commission should also protect other existing uses in the TV broadcast bands, including wireless microphones. Unfortunately, it does not appear that the interference mitigation measures proposed in the NPRM will work satisfactorily for wireless microphone users. The one exception to this is the Commission's proposal to designate "exempt" TV channels.

III. The Commission should establish exempt TV channels in each market for wireless microphone use

As discussed previously, musicians expect their wireless microphones and other wireless audio systems to operate reliably. If they hear noise or signal “dropouts,” they assume that something is wrong with the product and return it to the manufacturer or retailers for service . Most users would not be able to diagnose or resolve problems due to interference from unlicensed device transmissions. Furthermore, there is seldom time during a live performance to correct an unexpected interference issue.

In this NPRM the Commission suggested the possibility of designating several TV channels in each market as “exempt” channels, in which wireless microphones would be protected from interference. NAMM feels that this idea is worthwhile and necessary. Both VHF and UHF exempt channels would be needed, because wireless microphones are sold in separate models for either VHF or UHF operation.

If the Commission implements the use of a control signal as described elsewhere in the NPRM, that signal could carry the “exempt” TV channel information as well as the occupied (broadcast) TV channel data. Unlicensed devices monitoring the control signal would then automatically avoid operating on those channels. The Commission could also update the exempt channel data as necessary by following the same procedure used for updating broadcast TV channel data. *It is important that wireless microphone users have at least some exempt spectrum where they can continue to operate their equipment without interference from unlicensed devices.* These exempt channels would provide clear channels for the most critical wireless transmissions, and possibly eliminate the necessity of smaller-scale users having to purchase expensive equipment with other interference-mitigating technology.

#### IV. Additional protected spectrum is needed for large events

Although the exempt TV channels would help many wireless microphone users, they would only cover a portion of the spectrum requirements for productions such as a large musical show or major sports event. These productions require hundreds of wireless audio channels. For such situations, a different spectrum management approach is needed. One possibility would be to transmit a local control signal that would contain the occupied TV channel information for wireless microphones and wireless audio systems operating at that venue.

#### Conclusion

Wireless microphones are an important part of musical performance today. NAMM is not opposed to the idea of sharing TV broadcast spectrum with new unlicensed services, as long as existing uses such as wireless microphones and wireless audio systems are protected from interference. Musicians and other performers expect their wireless audio equipment to deliver faithful, uncompromised sound quality. They cannot be asked to deal with interference problems in the context of a live performance, either technically or logistically.

NAMM supports the Commission's proposal to establish "exempt" TV channels in each market, in which wireless microphones could be operated without interference from unlicensed devices. In addition, NAMM urges the FCC to study technical solutions that would address the needs of large wireless system operation before adopting rules permitting new unlicensed services to use the broadcast TV channels.

Respectfully submitted,

NAMM, the International Music Products Association

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